

Physics

DEVELOPMENT OF FILM ANALYSIS TOOL FOR DOSE VERIFICATION

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Tomotherapy is a new, improved form of radiation therapy. As with all forms of radiation therapy, dose verification is a critical aspect of the quality assurance of tomotherapy. To enable the dose verification of tomotherapy, a new film analysis tool has been developed to help perform film dosimetry. This new tool is a computer program written in LabVIEW. In order to get dose values from radiographic film that has been irradiated by tomotherapy, the program is first able to convert the individual pixel values from a scanned film to optical density (OD) values. This conversion is characteristic of the scanning equipment. The OD values are then converted to dose values. This conversion is characteristic of the type of radiographic film being used. Once these conversions are made, the program is able to provide 3-D dose verification, dose profile comparison, etc. Error analysis is also provided, which is another important aspect of quality assurance. After analyzing many films successfully, it has been shown that the film analysis tool written in LabVIEW is and will continue to be an excellent way of providing dose verification for tomotherapy.